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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,098	10/31/2003	Masahiro Tadauchi	040301-0639	9009
22428	7590	01/04/2006	EXAMINER	
FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			ZIMMERMAN, JOHN J	
			ART UNIT	PAPER NUMBER
			1775	

DATE MAILED: 01/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/697,098	<b>Applicant(s)</b> TADAUCHI ET AL.	
	<b>Examiner</b> John J. Zimmerman	<b>Art Unit</b> 1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 November 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>20051109, 20050728</u> | 6) <input type="checkbox"/> Other: _____  |

## **SECOND OFFICE ACTION**

### ***Amendments***

1. The AMENDMENT AND REPLY UNDER 37 CFR 1.111 received November 4, 2005 has been entered and considered. Claims 1-23 are pending in this application.

### ***Information Disclosure Statement***

2. The "INFORMATION DISCLOSURE STATEMENT" filed November 9, 2005 has been considered. The "INFORMATION DISCLOSURE STATEMENT" received July 25, 2005 has been considered. Initialed forms PTO-1449 are enclosed with this Second Office Action.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Shimizu (JP Publication 2001-121285).

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5. Shimizu discloses a lead-free joining material comprising zinc and tin as major components and further containing 1 wt.% Ge (e.g. see example 9 in Table 1; paragraph [0007]).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tadauchi (Japanese publication 2002-283093).
8. Tadauchi '093 discloses a lead-free joining material comprising a tin alloy containing between 3-12 wt.% zinc and further containing 1-3 wt.% bismuth (e.g. see paragraphs [0010], [0015]-[0016]; Figure 1). The particles are made by solidifying droplets of the molten alloy composition (e.g. see paragraph [0023]). The solidified spherical particles of this composition result in concentration zones of alloy constituents (e.g. see paragraph [0025]; Figure 3). The particles are mixed with a flux and a solder paste is created (e.g. see paragraph [0026]) and applied to a substrate and reflowed (e.g. see paragraph [0028]). Tadauchi '093 may differ from the pending claims in that Tadauchi '093 may not describe the surface layer as having a depth of 2  $\mu$ m, may not describe the concentration of bismuth in the solid-solution phase in a range of 0.6 to 4.0 wt.% and a needle crystal dispersed in the solid-solution phase including zinc as a main

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component. A review of applicant's disclosure, however, shows that the surface layer, concentration of bismuth and the needle crystals are a result of using the composition of Tadauchi '093 when solidifying the tin-zinc-bismuth alloy into particles. Although Tadauchi '093 does not describe these features of the particles, they would nonetheless be present in the particles of Tadauchi '093. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977). The fact that applicant has closely observed the tin-zinc alloy particles and described their microstructure in more detail than Tadauchi '093, does not differentiate the claimed subject matter from the particles of Tadauchi '093. Discovery of a new property or use of previously known composition, even if unobvious from the prior art, cannot impart patentability to claims to known composition, *In re Spada*, 15 USPQ2d 1655 (Court of Appeals, Federal Circuit 1990).

#### ***Response to Arguments***

9. Applicant's arguments filed November 4, 2005 have been fully considered but they are not persuasive.

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10. Applicant argues that Tadauchi's process is not substantially identical to applicant's process and therefore the product produced by Tadauchi's process would not be the same as the product produced by applicant's process. Applicant points to the use of a cooling bath filled with oil to solidify the droplets of Tadauchi verses the use of solidification in an inert gas atmosphere in the description of the process in applicant's pending application. As noted in the rejection, however, a review of applicant's disclosure shows that the surface layer, concentration of bismuth and the needle crystals are a result of using the composition of Tadauchi '093 when solidifying the tin-zinc-bismuth alloy into particles (e.g. see page 8, last line - page 9, line 14). Contrary to applicant's arguments, the applicant's disclosure does not attribute the claimed surface layer and microstructure to the specific use of solidification in an inert gas nor does it attribute these features to any specific solidification rate. A review of the disclosure shows no criticality associated with the solidification rate or use of inert gas to obtain the claimed solid solution phase and needle crystal features. If these features are indeed dependent of the specific process of cooling in an inert gas and cooling with a specific solidification rate, then the burden of proof is on applicant to factually show that the applicant's material, as claimed, is materially different than the particles of Tadauchi. Merely stating that the solidification rate of Tadauchi could or would be different than the solidification rate of applicant's process does not establish that the claimed features would not occur in the material of Tadauchi. Even if the cooling rate of Tadauchi may be different from the cooling rate of applicant's examples, does not establish that the claimed solid solution features and needle crystals would not be present in the material of Tadauchi. Particularly since the pending claims do not require that the material has been solidified at any particular rate or solidified in any particular medium. The fact that Tadauchi

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also solidifies molten droplets of the zinc-tin-bismuth alloy in a cooling medium shows sufficient similarity to applicants process of solidifying molten droplets of the zinc-tin-bismuth alloy in a cooling medium to shift the burden of proof to applicant in establishing the patentability of the pending claims. Factual evidence, e.g. by affidavit/declaration, is requested. In addition, if the solidification rate and the solidification medium are indeed critical to the applicant's process, then these limitations should be present in the applicant's method claims. Claims omitting features critical or essential to the practice of the invention are not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

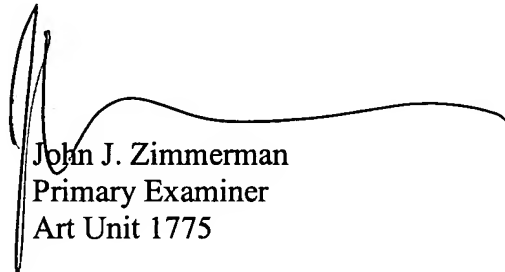
### ***Conclusion***

11. Applicant's amendment adding new claims necessitated the new ground of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Zimmerman whose telephone number is (571) 272-1547. The examiner can normally be reached on 8:30am-5:00pm, M-F. Supervisor Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John J. Zimmerman  
Primary Examiner  
Art Unit 1775

jjz  
December 12, 2005